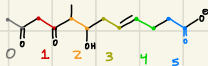# Polyketide Table

Count # of units (every 2 carbons)
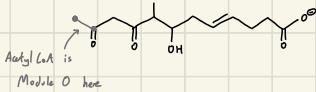

Each ketide unit gets an AT & ACP
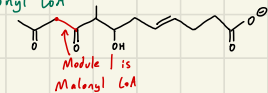
Every module except 0 gets KS

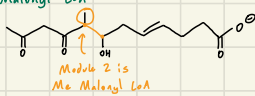| Module	Starting Material	AT	KS	KR	DH	ER	ACP	TE
0		AT_0					ACP_0	
1		AT_1	KS_1				ACP_1	
2		AT_2	KS_2				ACP_2	
3		AT_3	KS_3				ACP_3	
4		AT_4	KS_4				ACP_4	
5		AT_5	KS_5				ACP_5	

Starting material (Module 0)
here is Acetyl CoA

Acetyl CoA is
Module 0 here

Module	Starting Material	AT	KS	KR	DH	ER	ACP	TE
0	Acetyl CoA	AT_0					ACP_0	
1		AT_1	KS_1				ACP_1	
2		AT_2	KS_2				ACP_2	
3		AT_3	KS_3				ACP_3	
4		AT_4	KS_4				ACP_4	
5		AT_5	KS_5				ACP_5	

Units without Me sticking off are Malonyl CoA

Module 1 is
Malonyl CoA

Units with Me sticking off are
Me Malonyl CoA

Module 2 is
Me Malonyl CoA

Module	Starting Material	AT	KS	KR	DH	ER	ACP	TE
0	Acetyl CoA	AT_0					ACP_0	
1	Malonyl CoA	AT_1	KS_1				ACP_1	
2	Me Malonyl CoA	AT_2	KS_2				ACP_2	
3	Malonyl CoA	AT_3	KS_3				ACP_3	
4	Malonyl CoA	AT_4	KS_4				ACP_4	
5	Malonyl CoA	AT_5	KS_5				ACP_5	

If unit has $\overset{OH}{C}$, FOLLOWING module has KR

Unit 2 has OH,
so Module 3 has KR

Module	Starting Material	AT	KS	KR	DH	ER	ACP	TE
0	Acetyl CoA	AT_0					ACP_0	
1	Malonyl CoA	AT_1	KS_1				ACP_1	
2	Me Malonyl CoA	AT_2	KS_2				ACP_2	
3	Malonyl CoA	AT_3	KS_3	KR_3			ACP_3	
4	Malonyl CoA	AT_4	KS_4				ACP_4	
5	Malonyl CoA	AT_5	KS_5				ACP_5	

If unit has ⟍⟍ (double bond connecting to next unit), FOLLOWING module has KR and DH

Unit 3 has ⟍⟍
so Module 4 has KR, DH

Module	Starting Material	AT	KS	KR	DH	ER	ACP	TE
0	Acetyl CoA	AT_0					ACP_0	
1	Malonyl CoA	AT_1	KS_1				ACP_1	
2	Me Malonyl CoA	AT_2	KS_2				ACP_2	
3	Malonyl CoA	AT_3	KS_3	KR_3			ACP_3	
4	Malonyl CoA	AT_4	KS_4	KR_4	DH_4		ACP_4	
5	Malonyl CoA	AT_5	KS_5				ACP_5	
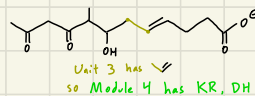
If unit has nothing, FOLLOWING module has KR, DH, ER

Unit 4 has nothing
so Module 5 has KR, DH, ER

Module	Starting Material	AT	KS	KR	DH	ER	ACP	TE
0	Acetyl CoA	AT_0					ACP_0	
1	Malonyl CoA	AT_1	KS_1				ACP_1	
2	Me Malonyl CoA	AT_2	KS_2				ACP_2	
3	Malonyl CoA	AT_3	KS_3	KR_3			ACP_3	
4	Malonyl CoA	AT_4	KS_4	KR_4	DH_4		ACP_4	
5	Malonyl CoA	AT_5	KS_5	KR_5	DH_5	ER_5	ACP_5	
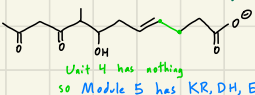
(If unit has $\overset{O}{C}$, nothing further needed)

Last Module has TE
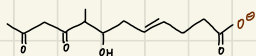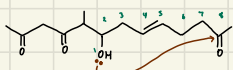
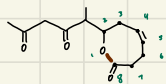| Module	Starting Material	AT	KS	KR	DH	ER	ACP	TE
0	Acetyl CoA	AT_0					ACP_0	
1	Malonyl CoA	AT_1	KS_1				ACP_1	
2	Me Malonyl CoA	AT_2	KS_2				ACP_2	
3	Malonyl CoA	AT_3	KS_3	KR_3			ACP_3	
4	Malonyl CoA	AT_4	KS_4	KR_4	DH_4		ACP_4	
5	Malonyl CoA	AT_5	KS_5	KR_5	DH_5	ER_5	ACP_5	TE_5

Termination

TE can hydrolyze:

or TE can macro lactonize!
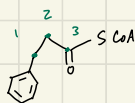(another —OH attacks ending carbonyl)

(see FA synth notes for more info)

↑ pretend that's an octagon

Drawing tips!

① count # of C's in starting material
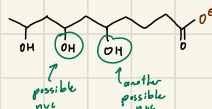→ S CoA leaves

$SCoA = CoAS = SACo = CoA$
(same thing)

② I like to draw out all 2 Carbon modules separate first...

Module 0   1   2 CH₃   3

②.5 Me Malonyl CoA
Methyl closer to 0th module
C's closer to end module

③ Only —OH can be nucleophile for TE macrolactonization

possible nuc ↑   ↑ another possible nuc

③.5 6 - numbered ring?
Count from end Carbon like so!